WHAT IS CLAIMED IS:

1. A method of performing adaptive connection admission control in consideration of input call states in a Differentiated Services (DiffServ) network, the DiffServ network including a bandwidth broker, a plurality of ingress and egress edge nodes and a plurality of core nodes, the method comprising the steps of:

a) a corresponding ingress edge node performing connection admission control for a new connection within an amount of bandwidth initially allocated to each of paths between the ingress and egress edge nodes;

b) comparing an amount of remaining bandwidth allocated to a specific path Pr with an amount of bandwidth required for a call requesting new connection setup input to the corresponding ingress edge node, and predicting an amount of additional bandwidth to be requested from the bandwidth broker when the amount of the remaining bandwidth does not satisfy the amount of the bandwidth required for the connection setup requesting call; and

c) requesting additional bandwidth from the bandwidth broker on the basis of the predicted amount of the additional bandwidth, changing bandwidth information of the corresponding path Pr, and performing connection admission control.

2. The adaptive connection admission control method according to claim 1, further comprising the step of d) decreasing the amount of additionally allocated bandwidth when

the amount of the additionally allocated bandwidth is not exhausted within a certain range, and returning the decreased amount of the additionally allocated bandwidth to the bandwidth broker.

3. The adaptive connection admission control method according to claim 2, wherein the step d) comprises the steps of:

comparing an amount of bandwidth UBW_i being used at current time T_i of the amount of the additionally allocated bandwidth with an amount of bandwidth UBW_{i-1} actually used at previous time T_{i-1}; and

decreasing an amount of currently available bandwidth BW_i of the corresponding path Pr when a difference between the amount of the bandwidth UBW_i and the amount of the bandwidth UBW_{i-1} is equal to or greater than a preset threshold.

4. The adaptive connection admission control method according to claim 3, wherein the amount of the currently available bandwidth BW_i of the corresponding path Pr is decreased to the amount of the bandwidth UBW_{i-1} actually used at the previous time T_{i-1}.

5. The adaptive connection admission control method according to claim 2, further comprising the step of the bandwidth broker withdrawing the decreased amount of the additionally allocated bandwidth and allocating the decreased amount of the additionally allocated bandwidth to another

path.

6. The adaptive connection admission control method according to claim 1, wherein the step a) comprises the steps of:

determining each of paths between the ingress and egress edge nodes within the DiffServ network using a routing protocol;

the bandwidth broker determining an amount of initial bandwidth for each path and reporting the determined amount of the initial bandwidth for each path to the ingress edge node;

selecting the path Pr using a destination address when the call requesting new connection setup is input to the ingress edge node; and

accepting the connection setup request when the amount of the remaining bandwidth, which is allocated to the selected path Pr and is currently available, is greater than the amount of the bandwidth required for the connection setup requesting call.

7. The adaptive connection admission control method according to claim 1, wherein the step b) is performed so that the amount of the additional bandwidth M' to be requested is calculated as expressed in the following Equation:

$$M' = BW_{(i+1)} = \frac{UBW_i - UBW_{i-1}}{T_i - T_{i-1}} \Delta t$$

$$\Delta t = \frac{\sum_{k=0}^{i} T_k - T_{k-1}}{i-1}$$

where T_i: time when i-th allocation of additional bandwidth is requested, BW_i: the amount of bandwidth allocated at time T_i, UBW_i: the amount of actually used bandwidth of the amount of the bandwidth allocated at time T_i, and Δt: average of time intervals at which the allocation of the additional bandwidth is requested from the bandwidth broker.

8. The adaptive connection admission control method according to claim 1, wherein the step b) is performed so that, when the amount of the remaining bandwidth satisfies the amount of the bandwidth required for the connection setup requesting call, the bandwidth information of the corresponding path Pr is changed as expressed in the following Equation.

amount of remaining bandwidth of Pr = amount of remaining bandwidth of Pr - amount of bandwidth required for new call

9. The adaptive connection admission control method according to claim 1, wherein the step c) comprises the steps of:

the ingress edge node requesting the bandwidth broker to allocate the additional bandwidth predicted depending on the state of the input call;

the bandwidth broker receiving the request, determining whether to accept the request for the allocation of the additional bandwidth depending on states of links through which the corresponding path Pr passes;

the ingress edge node receiving a response to the request

for the allocation of the additional bandwidth from the bandwidth broker and determining whether allocation of the additional bandwidth succeeds; and

rejecting the connection setup request if the allocation of the additional bandwidth fails, while changing the bandwidth information of the corresponding path Pr and accepting the connection setup request if the allocation of the additional bandwidth succeeds.

10. The adaptive connection admission control method according to claim 9, wherein the bandwidth information of the corresponding path Pr is changed as expressed in the following equation.

$$\text{amount of remaining bandwidth of Pr} = (\text{amount of remaining bandwidth of Pr} + M') - \text{amount of bandwidth required for new call}$$